



## Rocky Flats Citizens Advisory Board

### Special Work Session on Soil Action Levels

August 15, 2001

6 to 9:30 p.m.

Jefferson County Airport Terminal Building,  
11755 Airport Way, Broomfield

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#### **FACILITATOR:** Reed Hodgins

Jerry DePoorter, the Board's chair, called the meeting to order at 6:05 p.m.

**BOARD / EX-OFFICIO MEMBERS PRESENT:** Suzanne Allen, Robin Byrnes, Jerry DePoorter, Joe Downey, Jeff Eggleston, Shirley Garcia, Victor Holm, Jim Kinsinger, Bill Kossack, Tom Marshall, Mary Mattson, LeRoy Moore, Earl Sorrels / Steve Gunderson, Joe Legare, Tim Rehder

**BOARD / EX-OFFICIO MEMBERS ABSENT:** Jeff Allen, Maureen Eldredge, Tom Gallegos, Mary Harlow, Jason Krupar, Nancy Peters / Jeremy Karpatkin

**PUBLIC / OBSERVERS PRESENT:** John Rampe (DOE); Susan Griffin (EPA); Carl Spreng (CDPHE); Louise Janson (citizen); Doug Young (Rep. Udall's office); Katy Human (Boulder Daily Camera); Greg Lair (citizen); Allen Schubert (Kaiser-Hill); Dean Rundle (USFWS); Len Ackland (CU); Melissa Anderson (RFCLoG); Bob Nininger (Kaiser-Hill); Jerry Henderson (RFCAB staff); Ken Korkia (RFCAB staff); Noelle Stenger (RFCAB staff); Deb Thompson (RFCAB staff)

**RSAL educational session #3:** The Board held a special work session to discuss Radionuclide Soil Action Levels (RSALs). Members of the RSAL Working Group, which is working to develop the soil action levels, were invited to attend the meeting and serve as a resource for discussions.

The first topic on the agenda was Soil Action Levels 101. Information about the RSALs was given to Board members in advance of the meeting, and then time was set aside at the meeting for the Board to ask questions about issues that were still unclear. There was a statement made that soil action level science is not generally presented in a user-friendly manner, and working group members should consider how difficult it is to explain these issues to the general public when writing reports or making presentations. Other questions addressed climate issues and the effect of a drought.

Next, Susan Griffin with EPA (a member of the RSAL Working Group) gave a brief presentation on risk assessment and risk management issues. Susan also reviewed some data charts showing how calculations are made for point estimate modeling versus probabilistic modeling. Using a point estimate approach to modeling, the parameter inputs should represent a reasonable maximum exposure (RME) for an individual. She noted that EPA has used the same risk-assessment framework for over a decade. Developed nearly 20 years ago by the National

ADMIN RECORD

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Academy of Sciences, EPA has adopted RAGS methodology as policy. Under this approach, a site conceptual model is developed to describe the pathways by which human beings may reasonably be expected to come in contact with environmental contaminants. Pathways are categorized as being significant, insignificant, or incomplete. This is where the risk assessor relies on stakeholder input in order to understand current and future uses of the site. For each pathway identified in the site conceptual model there is a standard RAGS equation. The underlying assumptions are transparent, and the overall approach is consistent from site to site. However, site-specific values are used in the risk equations whenever possible. When RAGS methodology is used to derive soil action levels, the result is a quantitative estimate of the lifetime cancer risk attributable to various levels of contamination in the environment. Then, deciding what level of risk to future users will be deemed acceptable becomes the role of the risk manager. EPA guidance says that cleanup action is generally not warranted unless the cumulative cancer risk from all carcinogens is greater than one in 10,000 (or  $10^{-4}$ ). Tim Rehder briefly discussed the issue of risk management. He noted that moving from risk assessment to risk management is then leaving the scientific realm and entering the public policy realm. EPA guidance and regulation advises risk managers about the criteria to consider, such as protection of human health and the environment, compliance with relevant regulations, long and short-term effectiveness, cost effectiveness, as well as state and community acceptance. Board members had a few questions and comments following the presentation such as: the probability of cancer under any one of the scenarios, whether peripheral conditions are considered in the equation, and whether different and more conservative values will be considered. Mr. Rehder stated that using standard risk equations is how the risk range was developed. However, significant differences occurred based on the model being used.

Board member Victor Holm then took a few minutes to review and describe the RESRAD computer-modeling program. RESRAD is a computer program that incorporates equations and allows the use of more sophisticated data inputs. Mr. Holm said there is about a 10 percent difference between RESRAD and the RAGS modeling program used by EPA. RESRAD can perform risk equations either by dose or risk. RESRAD is approximately 10 percent less conservative than RAGS.

Finally, Tim Rehder reviewed for the Board the scenario descriptions currently under consideration by the RSAL Working Group. The first scenario is for the wildlife refuge worker. This individual is considered to be a full-time worker who builds trails, installs and maintains fences, conducts controlled burns, and conducts wildlife surveys. The routes of exposure then would be via soil ingestion, inhalation, and direct exposure to gamma radiation coming from the soils. The second scenario is a rural resident. In this scenario, the working group is considering that the resident would be an adult or child who lives on the former Rocky Flats site, on a developing five-acre ranchette. This individual lives a primarily suburban lifestyle, and would be found playing, gardening, weeding, lawn mowing, landscaping, etc. The routes of exposure are for this individual are soil ingestion, inhalation, plant ingestion, and direct gamma.

**PUBLIC COMMENT PERIOD:** No comments were received.

**DIALOGUE WITH RSAL WORKING GROUP / PROJECT COORDINATORS:** The remainder of the meeting was set aside for the major focus of the work session: to allow Board members to have a dialogue with DOE and agency personnel working on soil action levels. At the last meeting, the Board agreed on three general topics to start the discussion: key parameters, risk levels, and ALARA. A fourth topic was identified at the special work session, that of scenarios. Board members began discussions at the top of the list (key parameters) then agreed to continue

discussion at the next meeting on any remaining items they were unable to address. Since the Board only was able to focus on the first two items, the topics of ALARA and scenarios were postponed until the September meeting. Following are summaries of the comments, questions, and responses on key parameters and risk levels:

1. Regarding key parameters:

- Question: Of the four main parameters, is there a weighting factor? Response: Generally the order would be: 1) soil ingestion, 2) inhalation, 3) plant ingestion, and 4) time factors; however, that varies based on the scenario being used.
- Comment: The difference between the working group and RAC equations are that RAC considered the scenario parameters as fixed values. Response: Another idea is to distribute them. The working group chose conservative distribution, or range of values, for them.
- Comment: Using a range of values that is "capped" with the reasonable maximum exposure is not necessarily taking the most conservative approach. Response: The intent is not to impose conservatism but to represent the data as accurately as possible, to use all the data within the distribution. The model will run a number of simulations. This is using a method that ensures every point of the distribution is sampled. The working group does plan to run the RAC scenario for comparison.
- Comment: The refuge worker scenario is not based on maximums but rather based on averages, such as an average of seven years at the job rather than the maximum of 20, working 200+ days per year rather than allowing the maximum of 365. Response: Using RME is putting in high-end numbers and getting a high-end result. RME represents the exposures that are likely to be expected at the site, not the maximum exposure possible.
- Question: Regarding several contaminants having the same effect, is there an additive risk? Response: Risk assessment looks at cumulative risk. We would separate non-carcinogenic agents from carcinogenic agents.
- Question: Regarding the soil ingestion rate, it is a different value from that used by RAC. Does the working group plan to look at that issue further and determine if there is other information that might affect the outcome? Response: A next step for the working group is to finalize its work going into the Task 3 Report for peer review and comment. Based on the comments received, the group will look at what should be changed. However, at this point no changes to work are planned.
- Question: Have pica children been studied? Response: More detailed information does exist about pica children, and the group is tracking down information. Studies have not yet been done about the relationship of pica children to RSALs.

2. Regarding risk levels:

- Comment: There are two alternatives, either a bottom-up or a top-down strategy. The working group should start with a screening level of one in a million (or  $10^{-6}$ ) to determine if further action needs to be taken.
- Question: Can the risk be put into perspective for comparison purposes, to see if this is more or less protective. Response: For comparison only, the risk of being killed in a car crash is 1 in 10,000 (or  $10^{-4}$ ), and the risk of being killed in an airplane crash is 1 in 100,000 (or  $10^{-5}$ ).
- Comment: Are the risks from other hazards in the environment being taken into account? Because this is above and beyond those other risks, the lowest possible risk

from Rocky Flats is the best option.

- Comment: It is important to consider our cost constraints and the fact that more soil removed will have to be sent elsewhere rather than disposed of at Rocky Flats.  
Response: There is a difference between an accepted risk and an imposed risk; there is also a difference between some sites choosing to manage their waste in a different way and choosing to leave your waste in the environment.
- Comment: The sites that get cleaned up to  $10^{-6}$  (or 1 in 1,000,000) generally are small, easy to clean sites. Large, complicated sites like Rocky Flats rarely get cleaned up to that level.
- Comment: DOE wants to define a risk range that is considered safe;  $10^{-4}$  is considered safe by regulatory standards. Then we can talk about how we can do more, such as through ALARA concepts.
- Comment: The RSAL will be set somewhere on the risk range for a wildlife refuge worker, somewhere between 5 and 500 pCi/g. Institutional controls will also be established because there are other standards that must be considered, such as the surface water standard.
- Comment: How does this correspond to the UMTRA program? What risk levels were used? Response: Through UMTRA, uranium sites were cleaned up to around 5 to 15 picocuries, but cleaned up at a higher risk than  $10^{-4}$  for risk levels.
- Comment: The government spared no expense in creating these sites and contaminating the soil, it shouldn't spare any expense in cleaning it up. Response: Every year the budgets for these sites are attacked. It is important to convey these issues to your individual elected officials. Comment: One way to convey that sentiment to elected officials is to set the RSAL at a number that is most protective and that will cost more to clean up, which would show that the agencies and the public agree to make the effort to do the most conservative cleanup.

**NEXT STEPS:** The Board considered next steps such as any assignments or tasks for the Environmental Restoration Committee in advance of the next meeting. One member suggested a straw poll of Board members on what level they feel comfortable with:  $10^{-4}$  through  $10^{-6}$ . A quick poll of the Board members present demonstrated that more members felt more comfortable with a level of  $10^{-6}$ . The Environmental Restoration Committee will meet to discuss issues, and will post information from that meeting on CABlist for the Board to discuss and consider. A suggestion was made to provide questions for the agencies to consider before the next Board meeting. At the September meeting, there will be time set aside to continue the open discussion on the issues of ALARA and scenarios. The committee will begin by building a list of questions on CABlist, have the Board expand on the questions, then have the committee compile those questions for the agencies.

#### **NEXT MEETING:**

**Date:** September 6, 2001, 6 to 9:30 p.m.

**Location:** Jefferson County Airport Terminal Building, Mount Evans Room, 11755 Airport Way, Broomfield

**Agenda:** Work plan development; Soil Action Level Discussion #4: open dialogue regarding ALARA and scenarios

**MEETING ADJOURNED AT 9:30 p.m. \***

(\* Taped transcript of full meeting is available in the RFCAB office.)

**RESPECTFULLY SUBMITTED:**

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Jeffrey Eggleston, Secretary  
Rocky Flats Citizens Advisory Board

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The Rocky Flats Citizens Advisory Board is a community advisory group that reviews and provides recommendations on cleanup plans for Rocky Flats, a former nuclear weapons plant outside of Denver, Colorado.

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